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Reduced tillage, extended crop rotations improve soil health

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Missouri farmer Lance Conway examines soil in a sorghum field where the wheat cover crop was grazed prior to planting. Photo courtesy of Lance Conway.

Soil health testing has becoming increasingly popular. However, regionally relevant interpretations are not widely available because local soil and climate factors constrain the soil health potential of a farmer's field.

In a recent *Agronomy Journal* study, USDA-ARS and University of Missouri scientists evaluated soil health indicators across soil and climate gradients in Missouri through a **Department of Natural Resources state-wide, on-farm, cost-share program**. The researchers collected soil samples from 5,300 agricultural fields across the state and analyzed them for several soil health indicators. They found that soils in different regions responded similarly to tillage and crop rotation practices, showing a clear and substantial benefit of no-till and reduced tillage on soil health. The research team also found that diversified rotations with three or more crops exhibited greater biological and physical soil health than monoculture or two-crop rotations. Return sampling after five years will allow for a "before and after" comparison to evaluate the benefits of cover crop practices.

The study illustrates the potential for Missouri farmers to increase soil carbon content and improve soil health by adopting reduced tillage and extended crop rotations. The study also highlights the value of on-farm datasets from real-world production systems for evaluating management practices.

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Veum, K.S., Zuber, S.M., Ransom, C., Myers, R.L., Kitchen, N.R., & Anderson, S. H. (2022). Reduced tillage and rotational diversity improve soil health in Missouri. *Agronomy Journal*. **https://doi.org/10.1002/agj2.21156**

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